HD

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,060	07/15/2003	Robert M. Guidash	85354PCW	7686

7590 02/06/2008

Thomas H. Close
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER	
YODER III, CHRISS S	

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
02/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/620,060	GUIDASH, ROBERT M.	
	Examiner	Art Unit	
	Chriss S. Yoder, III	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/18/2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings were received on December 18, 2003. These drawings are not acceptable.

Fig. 3 as originally filed on July 15, 2003, has been split into Figs. 3a and 3b.

Fig. 6a as originally filed on July 15, 2003, has been split into Figs. 6a and 6b.

Fig. 6b as originally filed on July 15, 2003, has been split into Figs. 6c and 6d.

Fig. 6c as originally filed on July 15, 2003, has been changed to Fig. 6e.

Fig. 6d as originally filed on July 15, 2003, has been changed to Fig. 6f.

As such, new corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the description of each of these figures throughout the specification no longer corresponds to the correct figure. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-6, 8-9, 11-17, and 26-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Berger et al. (US Patent # 4,453,177).

2. In regard to **claim 1**, note Berger discloses an image sensor comprising a plurality of light measuring elements arranged in an array and at least a portion of the elements have a color filter mated with the light receiving elements which permits selective color reception by the light measuring elements (column 6, lines 50-67 and figure 4a), a plurality of floating diffusions respectively mated with the plurality of light receiving elements (column 9, lines 1-13; the reading diode 35 is considered to be the floating diffusion), and an output structure electrically connected to two or more of the floating diffusions (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), wherein the at least two light receiving elements receiving the same color are transferred to the output structure substantially simultaneously (column 7, line 56 – column 8, line 18).

3. In regard to **claim 2**, note Berger discloses that all the light receiving electrically connected to the same output structure are transferred to the output structure substantially simultaneously (column 7, line 56 – column 8, line 18).

4. In regard to **claim 3**, note Berger discloses a camera comprising an image sensor comprising a plurality of light measuring elements arranged in an array and at least a portion of the elements have a color filter mated with the light receiving elements which permits selective color reception by the light measuring elements (column 6, lines 50-67 and figure 4a), a plurality of floating diffusions respectively mated with the

plurality of light receiving elements (column 9, lines 1-13; the reading diode 35 is considered to be the floating diffusion), and an output structure electrically connected to two or more of the floating diffusions (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), wherein the at least two light receiving elements receiving the same color are transferred to the output structure substantially simultaneously (column 7, line 56 – column 8, line 18).

5. In regard to **claim 4**, note Berger discloses that all the light receiving electrically connected to the same output structure are transferred to the output structure substantially simultaneously (column 7, line 56 – column 8, line 18).

6. In regard to **claim 5**, note Berger discloses an image sensor comprising a plurality of light measuring elements a portion of which have a color filter mated with the light receiving elements, and the light receiving elements are arranged in an array (column 6, lines 50-67 and figure 4a), a plurality of floating diffusions respectively mated with the plurality of light receiving elements (column 9, lines 1-13; the reading diode 35 is considered to be the floating diffusion), two column circuits used to store the signal from the light receiving elements one row at a time (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), and a select switch used to control which column circuit a particular signal from a light receiving is stored (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

7. In regard to **claim 6**, note Berger discloses that substantially all of the same colors are transferred to the same column circuit (column 7, lines 5-18; all of the green

pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

8. In regard to **claim 8**, note Berger discloses a camera comprising an image sensor comprising a plurality of light measuring elements a portion of which have a color filter mated with the light receiving elements, and the light receiving elements are arranged in an array (column 6, lines 50-67 and figure 4a), a plurality of floating diffusions respectively mated with the plurality of light receiving elements (column 9, lines 1-13; the reading diode 35 is considered to be the floating diffusion), two column circuits used to store the signal from the light receiving elements one row at a time (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), and a select switch used to control which column circuit a particular signal from a light receiving is stored (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

9. In regard to **claim 9**, note Berger discloses that substantially all of the same colors are transferred to the same column circuit (column 7, lines 5-18; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

10. In regard to **claim 11**, note Berger discloses an x-y addressable image sensor comprising a plurality of light measuring elements arranged in an array of rows and columns that convert the light to a signal (column 6, lines 50-67 and figure 4a), at least two signal storage banks comprised of individual signal storage elements (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), the at least two storage banks having enough individual storage elements to store the signals from at least one row of light

measuring elements in the array (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), and at least two select mechanisms which can direct signals from the plurality of light measuring elements to any single or combination of the signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

11. In regard to **claim 12**, note Berger discloses that a plurality of color filters mated with the plurality of light measuring elements, and the select mechanism is used to send signals from the light measuring elements mated to a single color filter type to a desired signal storage bank such that, for any given row, a single signal storage bank contains signals from a single color type (column 7, lines 5-18; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

12. In regard to **claim 13**, note Berger discloses that the color filter is a Bayer pattern in which a color of a single type is sent to only one of the two signal storage banks (column 7, lines 5-18 and figure 4a; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

13. In regard to **claim 14**, note Berger discloses that the single color type sent to only one of the storage regions is green (column 7, lines 5-18; all of the green pixels are transferred to output 27).

14. In regard to **claim 15**, note Berger discloses that the individual signal storage elements in the signal storage banks are larger than light measuring element pitch (figure 4a; the storage elements 29 are wider than the pixel pitch).

15. In regard to **claim 16**, note Berger discloses that the at least two select mechanisms direct signals from the each of the plurality of light measuring elements to both signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

16. In regard to **claim 17**, note Berger discloses that a plurality of signal storage banks and the at least two select mechanisms direct signals to multiple signal storage banks (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49).

17. In regard to **claim 26**, note Berger discloses a camera comprising an x-y addressable image sensor comprising a plurality of light measuring elements arranged in an array of rows and columns that convert the light to a signal (column 6, lines 50-67 and figure 4a), at least two signal storage banks comprised of individual signal storage elements (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), the at least two storage banks having enough individual storage elements to store the signals from at least one row of light measuring elements in the array (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), and at least two select mechanisms which can direct signals from the plurality of light measuring elements to any single or combination of the signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

18. In regard to **claim 27**, note Berger discloses a plurality of color filters mated with the plurality of light measuring elements, and the select mechanism is used to send signals from the light measuring elements mated to a single color filter type to a desired signal storage bank such that, for any given row, a single signal storage bank contains signals from a single color type (column 7, lines 5-18; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

19. In regard to **claim 28**, note Berger discloses that the color filter is a Bayer pattern in which a color of a single type is sent to only one of the two signal storage banks (column 7, lines 5-18 and figure 4a; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

20. In regard to **claim 29**, note Berger discloses that the single color type sent to only one of the storage regions is green (column 7, lines 5-18; all of the green pixels are transferred to output 27).

21. In regard to **claim 30**, note Berger discloses that the individual signal storage elements in the signal storage banks are larger than light measuring element pitch (figure 4a; the storage elements 29 are wider than the pixel pitch).

22. In regard to **claim 31**, note Berger discloses that the at least two select mechanisms direct signals from the each of the plurality of light measuring elements to both signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

23. In regard to **claim 32**, note Berger discloses a plurality of signal storage banks and the at least two select mechanisms direct signals to multiple signal storage banks (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49).

24. Claims 22-25 and 37-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Fossum et al. (US Patent # 5,949,483).

25. In regard to **claim 22**, note Fossum discloses an image sensor comprising a plurality of light measuring elements each having a photodetector and a transfer mechanism (column 5, line 55 – column 6, line 21 and figure 3a), and a plurality of

charge to voltage conversion regions (column 11, lines 14-40), wherein at least two adjacent light measuring elements share a charge to voltage conversion region (column 11, lines 14-40), wherein charge of adjacent light measuring elements is combined in the shared charge to voltage conversion region (column 11, lines 14-40).

26. In regard to **claim 23**, note Fossum discloses that the timing selectively combines charge from light measuring elements with a similar color filter array element (column 7, lines 43-67 and column 10, lines 12-50; since all of the adjacent pixels are combined, this includes similar color elements).

27. In regard to **claim 24**, note Fossum discloses that the charge of adjacent light measuring elements is substantially simultaneously transferred to the shared charge to voltage conversion region (column 9, lines 48-57).

28. In regard to **claim 25**, note Fossum discloses that the charge of all adjacent light measuring elements associated with a common charge to voltage conversion regions is transferred to the shared charge to voltage conversion region to form a single voltage signal associated with all of the adjacent light measuring elements (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

29. In regard to **claim 37**, note Fossum discloses a camera comprising an image sensor comprising a plurality of light measuring elements each having a photodetector and a transfer mechanism (column 5, line 55 – column 6, line 21 and figure 3a), and a plurality of charge to voltage conversion regions (column 11, lines 14-40), wherein at least two adjacent light measuring elements share a charge to voltage conversion

region (column 11, lines 14-40), wherein charge of adjacent light measuring elements is combined in the shared charge to voltage conversion region (column 11, lines 14-40).

30. In regard to **claim 38**, note Fossum discloses that the timing selectively combines charge from light measuring elements with a similar color filter array element (column 7, lines 43-67 and column 10, lines 12-50; since all of the adjacent pixels are combined, this includes similar color elements).

31. In regard to **claim 39**, note Fossum discloses that the charge of adjacent light measuring elements is substantially simultaneously transferred to the shared charge to voltage conversion region (column 9, lines 48-57).

32. In regard to **claim 40**, note Fossum discloses that the charge of all adjacent light measuring elements associated with a common charge to voltage conversion regions is transferred to the shared charge to voltage conversion region to form a single voltage signal associated with all of the adjacent light measuring elements (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

33. Claims 7, 10, 18-21, and 33-36 rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. (US Patent # 4,453,177) in view of Fossum et al. (US Patent # 5,949,483).

34. In regard to **claim 7**, note Berger discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 6 above. Therefore, it can be seen that Berger fails to disclose that adjacent samples in each column circuit are averaged. In analogous art, Fossum discloses averaging adjacent samples in each column circuit (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that the averaging of adjacent samples in each column circuit is preferred in order to improve processing time by reducing the amount of data that is output (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Berger device to include the averaging of adjacent samples in each column circuit in order to improve processing time by reducing the amount of data that is output, as suggested by Fossum.

35. In regard to **claim 10**, note Berger discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 6 above. Therefore, it can be seen that Berger fails to disclose that adjacent samples in each column circuit are averaged. In analogous art, Fossum discloses averaging adjacent samples in each column circuit (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that the averaging of adjacent samples in each column circuit is preferred in

order to improve processing time by reducing the amount of data that is output (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Berger device to include the averaging of adjacent samples in each column circuit in order to improve processing time by reducing the amount of data that is output, as suggested by Fossum.

36. In regard to **claim 18**, note Berger discloses the use of an x-y addressable image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 11 above. Therefore, it can be seen that Berger fails to disclose that a single pixel can be directed to multiple single storage elements within any signal storage bank. In analogous art, Fossum discloses that a single pixel can be directed to multiple single storage elements within any signal storage bank (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that directing a single pixel to multiple single storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Berger device to direct a single pixel to multiple single storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time, as suggested by Fossum.

37. In regard to **claim 19**, note Fossum discloses that adjacent signals from the light measuring elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

38. In regard to **claim 20**, note Berger discloses the use of an x-y addressable image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 11 above. Therefore, it can be seen that Berger fails to disclose that a single pixel can be directed to adjacent individual signal storage elements within any signal storage bank. In analogous art, Fossum discloses that a single pixel can be directed to adjacent individual signal storage elements within any signal storage bank (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that directing a single pixel to adjacent individual signal storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Berger device to direct a single pixel to adjacent individual signal storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time, as suggested by Fossum.

39. In regard to **claim 21**, note Fossum discloses that adjacent signals from the light measuring elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

40. In regard to **claim 33**, note Berger discloses the use of an x-y addressable image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 26 above. Therefore, it can be seen that Berger fails to disclose that a single pixel can be directed to multiple single storage elements within any signal storage bank. In analogous art, Fossum discloses that a single pixel can be directed to multiple single storage elements within any signal storage bank (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that directing a single pixel to multiple single storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Berger device to direct a single pixel to multiple single storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time, as suggested by Fossum.

41. In regard to **claim 34**, note Fossum discloses that adjacent signals from the light measuring elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

42. In regard to **claim 35**, note Berger discloses the use of an x-y addressable image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 26 above. Therefore, it can be seen that Berger fails to disclose that a single pixel can be directed

to adjacent individual signal storage elements within any signal storage bank. In analogous art, Fossum discloses that a single pixel can be directed to adjacent individual signal storage elements within any signal storage bank (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that directing a single pixel to adjacent individual signal storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Berger device to direct a single pixel to adjacent individual signal storage elements within any signal storage bank is preferred in order to average adjacent samples to thereby reduce the amount of data that is output and improve processing time, as suggested by Fossum.

43. In regard to **claim 36**, note Berger discloses that adjacent signals from the light measuring elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US006784928B1: note the use of an image sensor having a first and second readout system.

US006690421B1: note the use of an image sensor having a first and second readout system.

US006236434B1: note the use of an image sensor having a first and second readout system.

US006160580A : note the use of an image sensor having a first and second readout system.

US 20020154231A1: note the use of an image sensor having a first and second readout system.

US006452153B1: note the use of an image sensor that merges pixels for output.

US006674094B2: note the use of an image sensor with shared floating diffusions.

US006686960B2: note the use of an image sensor that merges pixels for output.

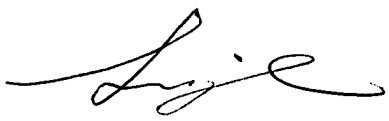
US004658287: note the use of an image sensor having a first and second readout system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CSY
February 1, 2008



LIN YE
SUPERVISORY PATENT EXAMINER